

HARPSTER RV PARK (PWS 2250055) SOURCE WATER ASSESSMENT FINAL REPORT

April 14, 2003



State of Idaho Department of Environmental Quality

Disclaimer: This publication has been developed as part of an informational service for the source water assessments of public water systems in Idaho and is based on data available at the time and the professional judgement of the staff. Although reasonable efforts have been made to present accurate information, no guarantees, including expressed or implied warranties of any kind, are made with respect to this publication by the State of Idaho or any of its agencies, employees, or agents, who also assume no legal responsibility for the accuracy of presentations, comments, or other information in this publication. The assessment is subject to modification if new data is produced.

Executive Summary

Under the Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency (EPA) to assess every source of public drinking water for its relative sensitivity to contaminants regulated by the Act. This assessment is based on a land use inventory of the designated source water assessment area and sensitivity factors associated with the well and aquifer characteristics.

This report, *Source Water Assessment for Harpster RV Park, Harpster, Idaho*, describes the public drinking water system, the boundaries of the zones of water contribution, and the associated potential contaminant sources located within these boundaries. This assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. **The results should not be used as an absolute measure of risk and they should not be used to undermine public confidence in the water system.**

The Harpster RV Park is a community drinking water system consisting of one active ground water well. The system currently serves less than 25 people through 11 connections. The well is located approximately one-half mile south of the City of Harpster between the South Fork of the Clearwater River and Highway 13.

Final susceptibility scores are derived from equally weighing system construction scores, hydrologic sensitivity scores, and potential contaminant/land use scores. Therefore, a low rating in one or two categories coupled with a higher rating in other categories results in a final rating of low, moderate, or high susceptibility. With the potential contaminants associated with most urban and heavily agricultural areas, the best score a well can expect to achieve is generally a moderate rating. Potential Contaminants/Land Uses are divided into four categories, inorganic contaminants (IOCs, i.e. nitrates, arsenic), volatile organic contaminants (VOCs, i.e. petroleum products), synthetic organic contaminants (SOCs, i.e. pesticides), and microbial contaminants (i.e. bacteria). As different wells can be subject to various contamination settings, separate scores are given for each type of contaminant.

In terms of total susceptibility, the well rated high for IOCs, VOCs, SOCs, and microbial contaminants. According to the 1997 Ground Water Under Direct Influence (GWUDI) field survey, the South Fork of the Clearwater River runs within 40 feet of the wellhead (within the sanitary setback or the 1A zone of the well), resulting in an automatic high susceptibility of the well to all potential contaminant categories. Additionally, a well log was not available, limiting the amount of information regarding the construction of the well and the lithology of the soils of the well shaft. System construction and hydrologic sensitivity both rated high. The potential contaminant inventory/land use of the area rated moderate for IOCs, VOCs, and SOCs, and rated low for microbial contaminants.

No VOCs or SOCs have ever been detected in the well. Trace concentrations of the IOCs barium, arsenic, nitrate, and fluoride have been detected in tested water, but at concentrations significantly below the maximum contaminant levels (MCLs) as set by the EPA. Total coliform bacteria have been detected in the distribution system from 1998 to 2001 with one confirmed detection in October 1998. However, no coliform bacteria have been detected at the well thus far.

The VOC dichloromethane, a disinfection by-product, was detected in the distribution system in February 2001. Though not a problem with the source water of the well, disinfection by-products can be a health concern. Disinfection by-products are formed when the disinfectant reacts with organic matter present in the water. According to the EPA Envirofacts website, long-term exposure to disinfection by-products has shown to be carcinogenic in lab animals. Short-term exposure at high doses may cause skin, eyes, nose, and throat irritation. For more information concerning disinfection by-products, visit www.epa.gov.

This assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what ranking a source receives, protection is always important. Whether the source is currently located in a “pristine” area or an area with numerous industrial and/or agricultural land uses that require surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources. If the system should need to expand in the future, new well sites should be located in areas with as few potential sources of contamination as possible, and the site should be reserved and protected for this specific use.

For the Harpster RV Park, drinking water protection activities should first focus on correcting any deficiencies outlined in the sanitary survey (an inspection conducted every five years with the purpose of determining the physical condition of a water system’s components and its capacity). Actions should be taken to keep a 50-foot radius perimeter clear of all potential contaminants from around the wellhead. Extra precautions should be taken to protect the well from contamination associated with the South Fork of the Clearwater River that runs within 40 feet of the wellhead. The GWUDI tests indicate that the well is ground water, but Zone 1A restrictions still apply. Any contaminant spills within the delineation should be carefully monitored and dealt with. As much of the designated protection areas are outside the direct jurisdiction of the Harpster RV Park, collaboration and partnerships with state and local agencies, and industry groups should be established and are critical to the success of drinking water protection. Providing a well log to the state and local agencies may assist them in identifying the Harpster RV Park’s drinking water protection needs. In addition, the well should maintain sanitary standards regarding wellhead protection.

Due to the time involved with the movement of ground water, drinking water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. A strong public education program should be a primary focus on any drinking water protection plan as the delineation contains some urban and residential land uses. Public education topics could include proper lawn care practices, household hazardous waste disposal methods, and the importance of water conservation to name but a few. There are multiple resources available to help communities implement protection programs, including the Drinking Water Academy of the EPA. As there are transportation corridors through the delineation, the Idaho Department of Transportation should be involved in protection activities.

A community must incorporate a variety of strategies in order to develop a comprehensive drinking water protection plan, be they regulatory in nature (i.e. zoning, permitting) or non-regulatory in nature (i.e. good housekeeping, public education, specific best management practices). For assistance in developing protection strategies please contact the Lewiston Regional Office of the Idaho Department of Environmental Quality or the Idaho Rural Water Association.

SOURCE WATER ASSESSMENT FOR HARPSTER RV PARK, HARPSTER, IDAHO

Section 1. Introduction - Basis for Assessment

The following sections contain information necessary to understand how and why this assessment was conducted. **It is important to review this information to understand what the rankings of this assessment mean.** Maps showing the delineated source water assessment area and the inventory of significant potential sources of contamination identified within that area are attached. The list of significant potential contaminant source categories and their rankings used to develop the assessment is also included.

Background

Under the Safe Drinking Water Act Amendments of 1996, all states are required by the EPA to assess every source of public drinking water for its relative susceptibility to contaminants regulated by the Safe Drinking Water Act. This assessment is based on a land use inventory of the delineated assessment area and sensitivity factors associated with the wells and aquifer characteristics.

Level of Accuracy and Purpose of the Assessment

Since there are over 2,900 public water sources in Idaho, there is limited time and resources to accomplish the assessments. All assessments must be completed by May of 2003. An in-depth, site-specific investigation of each significant potential source of contamination is not possible. **Therefore, this assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. The results should not be used as an absolute measure of risk and they should not be used to undermine public confidence in the water system.**

The ultimate goal of the assessment is to provide data to local communities to develop a protection strategy for their drinking water supply system. The Idaho Department of Environmental Quality (DEQ) recognizes that pollution prevention activities generally require less time and money to implement than treatment of a public water supply system once it has been contaminated. DEQ encourages communities to balance resource protection with economic growth and development. The local community, based on its own needs and limitations, should determine the decision as to the amount and types of information necessary to develop a drinking water protection program. Wellhead or drinking water protection is one facet of a comprehensive growth plan, and it can complement ongoing local planning efforts.

Section 2. Conducting the Assessment

General Description of the Source Water Quality

The Harpster RV Park is a community drinking water system consisting of one active ground water well. The system currently serves less than 25 people through 11 connections. The well is located approximately one-half mile south of the City of Harpster between the South Fork of the Clearwater River and Highway 13 (Figure 1).

No VOCs or SOCs have ever been detected in the well. Trace concentrations of the IOCs barium, arsenic, nitrate, and fluoride have been detected in tested water, but at concentrations significantly below the MCLs as set by the EPA. Total coliform bacteria have been detected in the distribution system from 1998 to 2001 with one confirmed detection in October 1998. However, no coliform bacteria have been detected at the well thus far.

The VOC dichloromethane, a disinfection by-product, was detected in the distribution system in February 2001. Though not a problem with the source water of the well, disinfection by-products can be a health concern. Disinfection by-products are formed when the disinfectant reacts with organic matter present in the water. According to the EPA Envirofacts website, long-term exposure to disinfection by-products has shown to be carcinogenic in lab animals. Short-term exposure at high doses may cause skin, eyes, nose, and throat irritation. For more information concerning disinfection by-products, visit www.epa.gov.

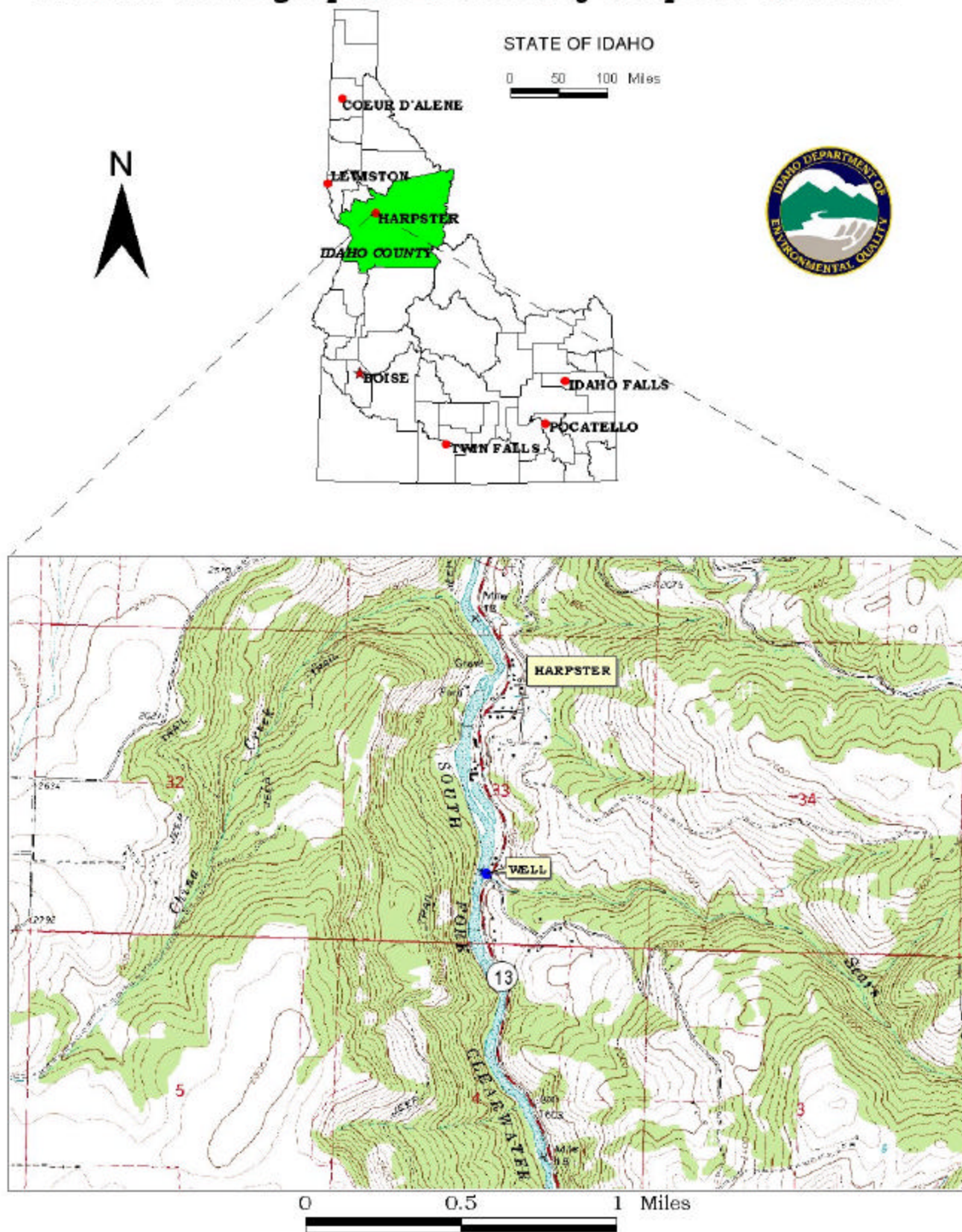
Defining the Zones of Contribution – Delineation

The delineation process establishes the physical area around a well that will become the focal point of the assessment. The process includes mapping the boundaries of the zone of contribution into time-of-travel (TOT) zones (zones indicating the number of years necessary for a particle of water to reach a well) for water in the aquifer. DEQ contracted with the University of Idaho to perform the delineations using a calculated fixed radius model approved by the EPA in determining the 3-year (Zone 1B), 6-year (Zone 2), and 10-year (Zone 3) TOT for water in the vicinity of the Harpster RV Park well. The computer model used site specific data, assimilated by the University of Idaho from a variety of sources including operator input, local area well logs, and hydrogeologic reports (detailed below).

The conceptual hydrogeologic model for the Harpster RV Park source well south of Kooskia, Idaho is based on interpretation of available well logs and published geologic maps. The there is a lack of a well log, the assumption is that water is derived from the crystalline aquifer of the Idaho Batholith. Bedrock geology is based on the geologic maps of the Hamilton, Pullman and Elk City quadrangles at a scale of 1:250,000 (Rember and Bennett, 1979). Geology of the area is quite complex with several structural features near the source. Basalt of the Columbia River Basalt Group surrounds batholith outcroppings.

The ground elevation is approximately 1,620 feet above mean sea level (msl) at Harpster RV Park well. Discharge from the source well is approximately 110 gallons per minute (gpm). For comparison, wells located in granite aquifers in the Moscow-Pullman Basin produce less than 100 gpm (Osiensky et al., 2000). Little information is known about the hydrogeology of the area.

FIGURE 1. Geographic Location of Harpster RV Park



Ground water occurrence in crystalline rock aquifers is influenced by weathering at shallow depths and fracturing at deeper depths (Kaal, 1978). Typically, ground water occurs under perched and water table conditions in surficial sediments and weathered bedrock, whereas weathered and fractured granite at deeper depths may contain ground water under confined conditions (Kaal, 1978). In unconfined aquifers, ground water flow generally follows topography and may be as little as 10 feet below ground.

Neighboring private wells were used for test points in the WhAEM simulations. Information on test points was obtained from a search of the Idaho Department of Water Resources database available on the Internet. The locations of the test points are limited to information supplied on well logs, typically the quarter-quarter section (0.25^2 mile²). Therefore, the accuracy of test point elevations and the static water elevations is dependent upon the accuracy of the driller's log and the topographic relief in the quarter-quarter section.

Because of the heterogeneity of the fractured and weathered aquifer material and the lack of the aquifer test data for the source well, it is not possible to create more than a generalized conceptual model, nor is it possible with available data to interpret the significance of hydrogeologic boundaries that may exist.

Several structural features are mapped near the source well. It is unknown whether these features are faults, anticlines or synclines. It is unknown whether these act as barriers to flow.

Although the South Fork of the Clearwater River is nearby, it is not believed to contribute to the overall hydrogeology in the granite aquifer.

No boundaries are used in modeling this source.

No aquifer recharge data are available for the Harpster area. In a study by Wyatt-Jaykim (1994) recharge to the central basin (Lewiston basin) was modeled as one inch per year (in/yr); two in/yr was selected in the higher areas. Because the Harpster area lies at a higher elevation than most of the basin, precipitation rates are much higher. Recharge is therefore expected to be greater.

The amount of areal recharge used in the model for the Harpster RV Park source well was two in/yr. This is a low value for higher elevations. Elevations in the vicinity of the well are approximately 1,600 to 1,800 feet above mean sea level with the nearby topography climbing to over 2,000 feet above mean sea level compared to Lewiston at approximately 700 feet above mean sea level.

The capture zones delineated herein are based on limited data and must be taken as best estimates. If more data become available in the future these delineations should be adjusted based on additional modeling incorporating the new data.

The calculated fixed-radius method is used to determine the capture zones for the Harpster RV Park well. The delineation can best be described as three concentric circles that overlay the South Fork of the Clearwater River and Highway 13 and cover a maximum diameter area of 3.5 miles² (Figure 2). The actual data used by the University of Idaho in determining the source water assessment delineation area is available from DEQ upon request.

Identifying Potential Sources of Contamination

A potential source of contamination is defined as any facility or activity that stores, uses, or produces, as a product or by-product, the contaminants regulated under the Safe Drinking Water Act and has a sufficient likelihood of releasing such contaminants at levels that could pose a concern relative to drinking water sources. The goal of the inventory process is to locate and describe those facilities, land uses, and environmental conditions that are potential sources of ground water contamination. The locations of potential sources of contamination within the delineation areas were obtained by field surveys conducted by DEQ and from available databases.

Land use within the immediate area and the surrounding area of the Harpster RV Park well contains woodland and rangeland.

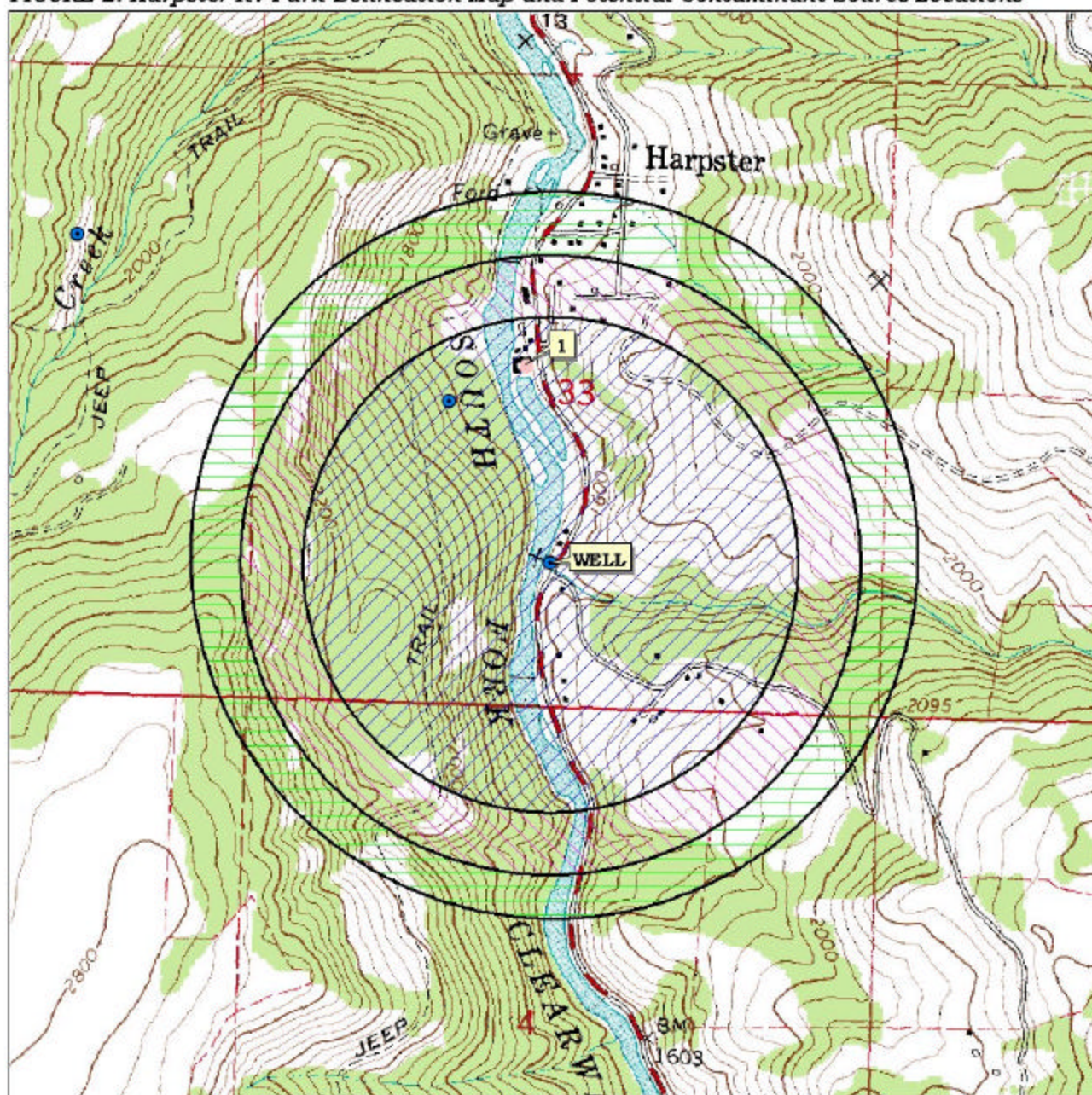
It is important to understand that a release may never occur from a potential source of contamination provided they are using best management practices. Many potential sources of contamination are regulated at the federal level, state level, or both to reduce the risk of release. Therefore, when a business, facility, or property is identified as a potential contaminant source, this should not be interpreted to mean that this business, facility, or property is in violation of any local, state, or federal environmental law or regulation. What it does mean is that the potential for contamination exists due to the nature of the business, industry, or operation. There are a number of methods that water systems can use to work cooperatively with potential sources of contamination, including educational visits and inspections of stored materials. Many owners of such facilities may not even be aware that they are located near a public water supply well.

Contaminant Source Inventory Process

A two-phased contaminant inventory of the study area was conducted in May and June 2002. The first phase involved identifying and documenting potential contaminant sources within the Harpster RV Park source water assessment area (Figure 2) through the use of computer databases and Geographic Information System (GIS) maps developed by DEQ. The second, or enhanced, phase of the contaminant inventory involved contacting the operator to identify and add any additional potential sources in the area.

The delineated source water assessment area of the Harpster RV Park well contains an aboveground storage tank (AST), the South Fork of the Clearwater River and Highway 13. In addition, the 1997 GWUDI field survey indicates that Sears Creek drains into the River, passing within 60 feet of the wellhead. It also shows that the River runs within 40 feet of the wellhead (within the sanitary setback or the 1A zone of the well). All of these potential contaminants can contribute leachable contaminants to the aquifer in the event of an accidental spill, release, or flood.

FIGURE 2. Harpster RV Park Delineation Map and Potential Contaminant Source Locations



0 1000 2000 Feet



PWS# 2250055
WELL

Table 1. Harpster RV Park, Well, Potential Contaminant Inventory and Land Use

Site	Description of Source ¹	TOT ² Zone	Source of Information	Potential Contaminants ³
1	AST-Diesel/gas	0-3 YR	Database Search	VOC, SOC
	South Fork of the Clearwater River	0-10 YR (1A)	GIS Map, GWUDI Survey	IOC, VOC, SOC, Microbials
	Highway 13	0-10 YR	GIS Map	IOC, VOC, SOC, Microbials
	Sears Creek	0-10 YR	GWUDI Survey	IOC, VOC, SOC, Microbials

¹ AST = aboveground storage tank

² TOT = time-of-travel (in years) for a potential contaminant to reach the wellhead

³ IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

Section 3. Susceptibility Analysis

A well's susceptibility to contamination was ranked as high, moderate, or low risk according to the following considerations: hydrologic characteristics, physical integrity of the well, land use characteristics, and potentially significant contaminant sources. The susceptibility rankings are specific to a particular potential contaminant or category of contaminants. Therefore, a high susceptibility rating relative to one potential contaminant does not mean that the water system is at the same risk for all other potential contaminants. The relative ranking that is derived for each well is a qualitative, screening-level step that, in many cases, uses generalized assumptions and best professional judgement. Appendix A contains the susceptibility analysis worksheets for the system. The following summaries describe the rationale for the susceptibility ranking.

Hydrologic Sensitivity

The hydrologic sensitivity of a well is dependent upon four factors: the surface soil composition, the material in the vadose zone (between the land surface and the water table), the depth to first ground water, and the presence of a 50-foot thick fine-grained zone (aquitard) above the producing zone of the well. Slowly draining soils such as silt and clay typically are more protective of ground water than coarse-grained soils such as sand and gravel. Similarly, fine-grained sediments in the subsurface and a water depth of more than 300 feet protect the ground water from contamination.

Hydrologic sensitivity rated high for the Harpster RV Park well. A well log was unavailable, preventing a determination of the composition of the vadose zone, the depth to first ground water, and the presence of any low permeability units above the producing zone of the well. When information is not available, a higher, more conservative, score is given.

Well Construction

Well construction directly affects the ability of the well to protect the aquifer from contaminants. System construction scores are reduced when information shows that potential contaminants will have a more difficult time reaching the intake of the well. Lower scores imply a system is less vulnerable to contamination. For example, if the well casing and annular seal both extend into a low permeability unit, then the possibility of contamination is reduced and the system construction score goes down. If the highest production interval is more than 100 feet below the water table, then the system is considered to have better buffering capacity. If the wellhead and surface seal are maintained to standards, as outlined in sanitary surveys, then contamination down the well bore is less likely. If the well is protected from surface flooding and is outside the 100-year floodplain, then contamination from surface events is reduced. A sanitary survey was conducted in 2002 for the system.

The well rated high for system construction. A well log was unavailable, limiting the amount of data concerning the placement of the annular seal and casing, the casing thickness and diameter, the static water level, and the highest production zone of the well. According to the 2002 sanitary survey, the wellhead and surface seal are maintained to standards. However, the well casing vent is not screened to prevent direct contamination into the well. The well is located outside a 100-year floodplain and is properly protected from surface flooding. In addition, microscopic particulate analysis (MPA) tests have determined that the well produces from a ground water source.

Though the well may have been in compliance with standards when it was completed, current PWS well construction standards are more stringent. The Idaho Department of Water Resources *Well Construction Standards Rules* (1993) require all PWSs to follow DEQ standards as well. IDAPA 58.01.08.550 requires that PWSs follow the *Recommended Standards for Water Works* (1997) during construction. These standards include provisions for well screens, pumping tests, and casing thicknesses to name a few. Table 1 of the *Recommended Standards for Water Works* (1997) lists the required steel casing thickness for various diameter wells. In this case, there was insufficient information available to determine if the wells meet all the criteria outlined in the IDWR Well Construction Standards.

Potential Contaminant Source and Land Use

The well rated moderate for IOC's (i.e. nitrates, arsenic), VOC's (i.e. petroleum products, chlorinated solvents) and SOC's (i.e. pesticides), and low for microbial contaminants (i.e. bacteria). The potential contaminant sources within the delineation that can add leachable contaminants to the aquifer combined with the less contaminating rangeland/woodland land use contributed to the potential contaminant inventory/land use scores.

Final Susceptibility Ranking

An IOC detection above a drinking water standard MCL, any detection of a VOC or SOC, or a detection of total coliform bacteria or fecal coliform bacteria at the wellhead will automatically give a high susceptibility rating to a well despite the land use of the area because a pathway for contamination already exists. Additionally, if there are contaminant sources located within 50 feet of the source then the wellhead will automatically get a high susceptibility rating. In this case, the South Fork of the Clearwater River runs within 40 feet of the wellhead. Hydrologic sensitivity and system construction scores are heavily weighted in the final scores. Having multiple potential contaminant sources in the 0 to 3-year time of travel zone (Zone 1B) and agricultural land contribute greatly to the overall ranking. The well rated an automatic high susceptibility for IOC's, VOC's, SOC's, and microbial contaminants.

Table 2. Summary of Harpster RV Park Susceptibility Evaluation

Well	Susceptibility Scores ¹									
	Hydrologic Sensitivity	Contaminant Inventory				System Construction	Final Susceptibility Ranking			
		IOC	VOC	SOC	Microbials		IOC	VOC	SOC	Microbials
Well	H	M	M	M	L	H	H(*)	H(*)	H(*)	H(*)

¹H = High Susceptibility, M = Moderate Susceptibility, L = Low Susceptibility,

IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

H(*) = An automatic high susceptibility due the South Fork of the Clearwater River and also a high number of overall points

Susceptibility Summary

The Harpster RV Park is a community drinking water system consisting of one active ground water well. The system currently serves less than 25 people through 11 connections. The well is located approximately one-half mile south of the City of Harpster between the South Fork of the Clearwater River and Highway 13 (Figure 1).

In terms of total susceptibility, the well rated high for IOCs, VOCs, SOCs, and microbial contaminants. According to the 1997 GWUDI field survey, the South Fork of the Clearwater River runs within 40 feet of the wellhead (within the sanitary setback or the 1A zone of the well), resulting in an automatic high susceptibility of the well to all potential contaminant categories. Additionally, a well log was not available, limiting the amount of information regarding the construction of the well and the lithology of the soils of the area. System construction and hydrologic sensitivity both rated high. The potential contaminant inventory/land use of the area rated moderate for IOCs, VOCs, and SOCs, and rated low for microbial contaminants.

Section 4. Options for Drinking Water Protection

The susceptibility assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what the susceptibility ranking a source receives, protection is always important. Whether the source is currently located in a “pristine” area or an area with numerous industrial and/or agricultural land uses that require surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

For the Harpster RV Park, drinking water protection activities should first focus on correcting any deficiencies outlined in the sanitary survey. Actions should be taken to keep a 50-foot radius perimeter clear of all potential contaminants from around the wellhead. Extra precautions should be taken to protect the well from contamination associated with the South Fork of the Clearwater River that runs within 40 feet of the wellhead.

Any contaminant spills within the delineation should be carefully monitored and dealt with. As much of the designated protection areas are outside the direct jurisdiction of the Harpster RV Park, collaboration and partnerships with state and local agencies, and industry groups should be established and are critical to the success of drinking water protection. In addition, the well should maintain sanitary standards regarding wellhead protection.

Due to the time involved with the movement of ground water, drinking water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. As there are many houses within the delineation, a strong public education program should be a primary focus of any drinking water protection plan. Public education topics could include proper lawn and garden care practices, hazardous waste disposal methods, proper care and maintenance of septic systems, and the importance of water conservation to name but a few. There are multiple resources available to help communities implement protection programs, including the Drinking Water Academy of the EPA.

A system must incorporate a variety of strategies in order to develop a comprehensive drinking water protection plan, be they regulatory in nature (i.e. zoning, permitting) or non-regulatory in nature (i.e. good housekeeping, public education, specific best management practices). For assistance in developing protection strategies please contact the Lewiston Regional Office of the DEQ or the Idaho Rural Water Association.

Assistance

Public water supplies and others may call the following DEQ offices with questions about this assessment and to request assistance with developing and implementing a local protection plan. In addition, draft protection plans may be submitted to the DEQ office for preliminary review and comments.

Lewiston Regional DEQ Office (208) 799-4370

State DEQ Office (208) 373-0502

Website: <http://www.deq.state.id.us>

Water suppliers serving fewer than 10,000 persons may contact Melinda Harper, mlharper@idahoruralwater.com, Idaho Rural Water Association, at 208-343-7001 for assistance with drinking water protection (formerly wellhead protection) strategies.

POTENTIAL CONTAMINANT INVENTORY

LIST OF ACRONYMS AND DEFINITIONS

AST (Aboveground Storage Tanks) – Sites with aboveground storage tanks.

Business Mailing List – This list contains potential contaminant sites identified through a yellow pages database search of standard industry codes (SIC).

CERCLIS – This includes sites considered for listing under the **Comprehensive Environmental Response Compensation and Liability Act (CERCLA)**. CERCLA, more commonly known as Superfund is designed to clean up hazardous waste sites that are on the national priority list (NPL).

Cyanide Site – DEQ permitted and known historical sites/facilities using cyanide.

Dairy – Sites included in the primary contaminant source inventory represent those facilities regulated by Idaho State Department of Agriculture (ISDA) and may range from a few head to several thousand head of milking cows.

Deep Injection Well – Injection wells regulated under the Idaho Department of Water Resources generally for the disposal of stormwater runoff or agricultural field drainage.

Enhanced Inventory – Enhanced inventory locations are potential contaminant source sites added by the water system. These can include new sites not captured during the primary contaminant inventory, or corrected locations for sites not properly located during the primary contaminant inventory. Enhanced inventory sites can also include miscellaneous sites added by the Idaho Department of Environmental Quality (DEQ) during the primary contaminant inventory.

Floodplain – This is a coverage of the 100year floodplains.

Group 1 Sites – These are sites that show elevated levels of contaminants and are not within the priority one areas.

Inorganic Priority Area – Priority one areas where greater than 25% of the wells/springs show constituents higher than primary standards or other health standards.

Landfill – Areas of open and closed municipal and non-municipal landfills.

LUST (Leaking Underground Storage Tank) – Potential contaminant source sites associated with leaking underground storage tanks as regulated under RCRA.

Mines and Quarries – Mines and quarries permitted through the Idaho Department of Lands.)

Nitrate Priority Area – Area where greater than 25% of wells/springs show nitrate values above 5 mg/L.

NPDES (National Pollutant Discharge Elimination System) – Sites with NPDES permits. The Clean Water Act requires that any discharge of a pollutant to waters of the United States from a point source must be authorized by an NPDES permit.

Organic Priority Areas – These are any areas where greater than 25 % of wells/springs show levels greater than 1% of the primary standard or other health standards.

Recharge Point – This includes active, proposed, and possible recharge sites on the Snake River Plain.

RICRIS – Site regulated under **Resource Conservation Recovery Act (RCRA)**. RCRA is commonly associated with the cradle to grave management approach for generation, storage, and disposal of hazardous wastes.

SARA Tier II (Superfund Amendments and Reauthorization Act Tier II Facilities) – These sites store certain types and amounts of hazardous materials and must be identified under the Community Right to Know Act.

Toxic Release Inventory (TRI) – The toxic release inventory list was developed as part of the Emergency Planning and Community Right to Know (Community Right to Know) Act passed in 1986. The Community Right to Know Act requires the reporting of any release of a chemical found on the TRI list.

UST (Underground Storage Tank) – Potential contaminant source sites associated with underground storage tanks regulated as regulated under RCRA.

Wastewater Land Applications Sites – These are areas where the land application of municipal or industrial wastewater is permitted by DEQ.

Wellheads – These are drinking water well locations regulated under the Safe Drinking Water Act. They are not treated as potential contaminant sources.

NOTE: Many of the potential contaminant sources were located using a geocoding program where mailing addresses are used to locate a facility. Field verification of potential contaminant sources is an important element of an enhanced inventory.

Where possible, a list of potential contaminant sites unable to be located with geocoding will be provided to water systems to determine if the potential contaminant sources are located within the source water assessment area.

References Cited

- Freeze, R. A., and Cherry, J.A.; 1979. Ground water. Prentice Hall, Englewood Cliffs, NJ, 604p.
- Great Lakes-Upper Mississippi River Board of State and Provincial Public Health and Environmental Managers, 1997. "Recommended Standards for Water Works."
- Idaho Department of Agriculture, 1998. Unpublished Data.
- Idaho Department of Environmental Quality, 1997. Design Standards for Public Drinking Water Systems. IDAPA 58.01.08.550.01.
- Idaho Department of Water Resources, 1993. Administrative Rules of the Idaho Water Resource Board: Well Construction Standards Rules. IDAPA 37.03.09.
- Idaho Division of Environmental Quality, 1988. Sanitary survey for Harpster RV Park
- Kaal, A.S.; 1978. Analysis of Hydrogeologic Factors for the Location of Water Wells in the Granitic Environment of Moscow Mountain, Latah County, Idaho. University of Idaho M.S. Thesis.
- Kraemer, S.R., Haitjema, H.M., and Kelson, V.A.; 2000. Working with WhAEM2000 Source Water Assessment for a Glacial Outwash Wellfield, Vincennes, Indiana; EPA Document EPA/600/R-00/022; 50p.
- Osiensky, J.L., Nimmer, R.E., and McKenna, J.; 2000. Moscow Basin Source Water Assessment Report, IDEQ.
- Rember, W.C., and Bennett, E.H.; 1979. Geologic Map of the Hamilton Quadrangle, Idaho, Idaho Bureau of Mines and Geology, Moscow, ID.
- Rember, W.C., and Bennett, E.H.; 1979. Geologic Map of the Elk River Quadrangle, Idaho, Idaho Bureau of Mines and Geology, Moscow, ID.
- Rember, W.C., and Bennett, E.H.; 1979. Geologic Map of the Pullman Quadrangle, Idaho, Idaho Bureau of Mines and Geology, Moscow, ID.
- Williams, Dr. Barbara, Robin Nimmer, Dr. James Osiensky, Amy Owen; 2001. Clearwater Plateau Source Water Assessment Report, IDEQ.
- Wyatt-Jaykim Engineers; 1994. Lewiston Basin Deep Aquifer Study, prepared for Lewiston Orchards Irrigation District (LOID).

Appendix A

Harpster RV Park Susceptibility Analysis Worksheet

The final scores for the susceptibility analysis were determined using the following formulas:

- 1) VOC/SOC/IOC Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.2)
- 2) Microbial Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.375)

Final Susceptibility Scoring:

0 - 5 Low Susceptibility

6 - 12 Moderate Susceptibility

≥ 13 High Susceptibility

1. System Construction

SCORE

Drill Date	Unknown	
Driller Log Available	NO	
Sanitary Survey (if yes, indicate date of last survey)	YES	1988
Well meets IDWR construction standards	NO	1
Wellhead and surface seal maintained	NO	1
Casing and annular seal extend to low permeability unit	NO	2
Highest production 100 feet below static water level	NO	1
Well located outside the 100 year flood plain	YES	0
Total System Construction Score		5

2. Hydrologic Sensitivity

Soils are poorly to moderately drained	NO	2
Vadose zone composed of gravel, fractured rock or unknown	YES	1
Depth to first water > 300 feet	NO	1
Aquitard present with > 50 feet cumulative thickness	NO	2
Total Hydrologic Score		6

3. Potential Contaminant / Land Use - ZONE 1A

IOC Score	VOC Score	SOC Score	Microbial Score
-----------	-----------	-----------	-----------------

Land Use Zone 1A	RANGELAND, WOODLAND, BASALT	0	0	0	0
Farm chemical use high	NO	0	0	0	
IOC, VOC, SOC, or Microbial sources in Zone 1A	YES	YES	YES	YES	YES
Total Potential Contaminant Source/Land Use Score - Zone 1A		0	0	0	0

Potential Contaminant / Land Use - ZONE 1B

Contaminant sources present (Number of Sources)	YES	2	3	3	2
(Score = # Sources X 2) 8 Points Maximum		4	6	6	4
Sources of Class II or III leacheable contaminants or 4 Points Maximum	YES	2	3	3	
Zone 1B contains or intercepts a Group 1 Area	NO	0	0	0	0
Land use Zone 1B	Less Than 25% Agricultural Land	0	0	0	0
Total Potential Contaminant Source / Land Use Score - Zone 1B		6	9	9	4

Potential Contaminant / Land Use - ZONE II

Contaminant Sources Present	YES	2	2	2	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Land Use Zone II	Less than 25% Agricultural Land	0	0	0	
Potential Contaminant Source / Land Use Score - Zone II		3	3	3	0

Potential Contaminant / Land Use - ZONE III

Contaminant Source Present	YES	1	1	1	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Is there irrigated agricultural lands that occupy > 50% of	NO	0	0	0	
Total Potential Contaminant Source / Land Use Score - Zone III		2	2	2	0

Cumulative Potential Contaminant / Land Use Score

11	14	14	4
----	----	----	---

4. Final Susceptibility Source Score

13	14	14	13
----	----	----	----

5. Final Well Ranking

High	High	High	High
------	------	------	------